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Manitoba Health Care Studies and their Policy Implications

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MANITOBA HEALTH CARE STUDIES AND THEIR POLICY IMPLICATIONS

EXECUTIVE SUMMARY

Introduction

Over the past 15 years, Manitoba researchers have used the administrative data routinely gathered by the Health Services Commission to study a variety of important health care issues.

At the request of Manitoba Health, the Centre for Health Policy and Evaluation has summarized the results of this research and has, when appropriate, made specific recommendations to government based on the findings of the investigators. This Executive Summary contains a brief resume of the research results and the recommendations. For a more complete description of the studies, see the relevant section in the accompanying report.

Manitoba is uniquely fortunate in three respects: the data files of the Manitoba Health Services Commission (MHSC) are suited to both cross-sectional (i.e., across time) and longitudinal (i.e., over time) studies on the use and outcomes of health care services; the Manitoba Studies on Aging, with their interviews of representative samples of elderly Manitobans, have made it possible to link the data on their health and psychosocial characteristics with their use of all health care services from 1970 to the present; and the

province continues to have a number of researchers interested in using these data to evaluate current health care delivery practices and to assess the policy implications of these practices. As a result, many major studies of international importance and of particular relevance to Manitoba and Manitobans have been published.

The publications using the Manitoba data can be divided into four broad categories:

- studies whose main purpose was to assess the quality of the data for research when the information is routinely gathered for other purposes;
- studies whose main purpose was to evaluate the quality of health care services by examining the link between needs and interventions or the link between a specific procedure or treatment and the outcome;
- studies whose main purpose was to examine the patterns of health service utilization by the general population or by specific subpopulations to identify the factors that place certain people at risk of requiring specific services or to evaluate whether the delivery of particular services is consistent with need and with the best use of Manitoba's health care resources;
- studies whose main purpose was to identify the incidence and prevalence of a specific disease in Manitoba and to assess its effect.

However, this division of the research according to its primary goal is arbitrary because some studies addressed questions relevant to more than one category.

Research is an ongoing activity of the investigators associated with the Centre of Health Policy and Evaluation. Therefore, a number of relevant studies are always in progress. The document, however, summarizes only completed studies that were published or submitted for publication before December 31, 1990.

SECTION I: THE QUALITY OF THE DATA

I.1 The use of routinely gathered MHSC data for research purposes has important advantages. It is often far less expensive than studies using clinical trials or surveys. It is nonintrusive. For some purposes, it is more reliable than survey data which depend on the interviewer's recollection of events. It permits the study of health care both cross-sectionally and longitudinally, and emphasizes population-based (epidemiological) analyses rather than simply counting the cases from tertiary care hospitals. This expands the applicability of the findings to the situation as it exists in community hospitals, not merely those results seen in teaching hospitals.

I.2 Population-based research helps ensure that the results can be provided to policymakers and planners with sufficient confidence that the descriptions are accurate representations of conditions in the province. The ability to study contacts with the health care system over time leads to greater accuracy in the assessment of outcomes. Analyses that do not have a population-based focus may miss important events which occur after the patient is discharged from hospital. In Manitoba, the relative percentage of short-term readmissions to hospitals other than the first hospital is significant. Thus, population-based data provide a perspective beyond that generated by single-hospital data.

I.3 Checks of the Manitoba data bank done over many years and in conjunction with many studies indicate that the data are of high quality, compare favourably with data obtained by other methods in terms of reliability and validity, and can be used for a variety of purposes. These checks also clearly point out which data must be treated with caution and under what conditions the data can be used to best advantage.

The generally high quality of the data is supported by comparisons with other data sources, by the judgement of highly-respected external investigators who have been involved in collaborative research and by the

international recognition with which the published research has been received.

SECTION II: NEED, INTERVENTION AND OUTCOMES

II.1.1 The Manitoba studies highlight a number of issues which need to be addressed: variations in surgical rates between areas of the province, differences of opinion among physicians in selecting patients for elective surgery, the underestimation of risk and possible overestimation of benefits associated with some procedures, and the adoption of new procedures before their risks and benefits are thoroughly studied.

These studies were carried out over some length of time. Therefore, the recommendations made in regards to these issues assume that the information on specific procedures will be updated when necessary before action is taken.

The strategies proposed to deal with these issues are based on the principle that professional and scientific approaches are preferable to administrative or punitive measures.

II.1.2 A significant proportion of hospitalizations do not fit a model based solely on medical need. Physician practice style and the way in which physicians deal with

medical uncertainty are major contributors to differences in hospital admission rates between geographic areas. High and very high variability in admission rates can be very costly when a procedure is commonly performed and, therefore, results in a large number of admissions or when the admission involves a less frequently performed but expensive medical service and a relatively long hospital stay. Patients in high-rate areas may also be at greater risk because physicians practising in these areas appear to do more surgery on high-risk patients.

II.1.3 A strategy of identifying areas in which physicians perform specific procedures at a much higher than average rate adjusting for area population characteristics, feeding back the information to the local physicians, and monitoring the results has resulted in lower admission rates elsewhere in North America. The evidence also suggests that the best results are achieved when the feedback process involves a physician who specializes in performing the procedure in question and who is highly regarded by his/her peers.

II.1.4 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- USE THE COMPUTER SOFTWARE PROGRAM DESIGNED FOR MHSC BY DR. L. ROOS TO IDENTIFY AREAS WITH A HIGH RATE OF SPECIFIC SURGICAL INTERVENTIONS COMPARED WITH MOST OTHER AREAS IN MANITOBA; COMPARISONS WITH THE REST OF CANADA AND ELSEWHERE MAY ALSO BE APPROPRIATE;

- ASK THE COLLEGE OF PHYSICIANS AND SURGEONS OF MANITOBA (CPSM) TO WORK WITH THE DEPARTMENT TO ESTABLISH A COMMITTEE FOR EACH SPECIFIC PROCEDURE. THE COMMITTEES WOULD FEED BACK INFORMATION ON AREA RATES TO THE PHYSICIANS BY APPOINTING A HIGHLY-RESPECTED PHYSICIAN OR A GROUP OF PHYSICIANS TO BE INVOLVED IN THE FEEDBACK PROCESS. THE COMMITTEES WOULD ALSO EXPLORE REASONS TO ACCOUNT FOR VERY HIGH AND VERY LOW RATE AREAS WITH AREA PHYSICIANS;
- INFORM THE PHYSICIANS THAT THEIR FUTURE PRACTICE STYLE WILL BE MONITORED TO APPRISE THE CPSM IF CHANGE TAKES PLACE.

II.2.1 Medical uncertainty also probably underlies the differences among physicians in deciding which patients will benefit from a specific elective surgical procedure. Selecting the "right" patients for surgery is important not only to control costs by reducing the number of procedures performed but also, perhaps more importantly, as a means to reduce the number of poor outcomes from high risk procedures.

II.2.2 In some instances, encouraging adherence to existing guidelines may help resolve differences, and subsequent routine monitoring can be used to assess the need for additional follow-up. In other instances, however, conservative selection criteria will need to be established and disseminated.

Evidence elsewhere also suggests that greater dissemination of information to patients on the risks and benefits of a specific procedure helps reduce their demand for elective surgical intervention.

II.2.3 IT IS, THEREFORE, RECOMMENDED THAT:

- FOR PROCEDURES FOR WHICH GUIDELINES ON PATIENT SELECTION EXIST (E.G., TONSILLECTOMY), MANITOBA HEALTH INVITE THE CPSM AND THE M.M.A. TO PARTICIPATE IN A STUDY TO ASSESS THE DEGREE OF PHYSICIAN ADHERENCE TO THE GUIDELINES WITH A VIEW TOWARDS FOLLOWING UP ON NON-CONFORMING PHYSICIANS.

- FOR PROCEDURES SUCH AS ELECTIVE PROCEDURES WHICH HAVE QUESTIONABLE BENEFITS OR RELATIVELY HIGH RISK (E.G., HIP REPLACEMENT, TRANSURETHRAL PROSTATECTOMY, AND HYSTERECTOMY), MANITOBA HEALTH ASK THE CENTRE FOR HEALTH POLICY AND EVALUATION TO IDENTIFY QUALIFIED EXPERTS WHO CAN COLLABORATE WITH THE CPSM TO CONVENE A SMALL WORKING GROUP TO REVIEW THE LITERATURE, COORDINATE ITS WORK WITH INTERNATIONAL EFFORTS AND USE BOTH LOCAL AND OUTSIDE EXPERTS TO DEVELOP A CONSENSUS ON CONSERVATIVE BUT APPROPRIATE CRITERIA FOR PATIENT SELECTION AFTER WHICH THE AGREED-UPON CRITERIA WOULD BE SHARED WITH PHYSICIANS PERFORMING THE SPECIFIC PROCEDURES. IN VIEW OF THE HIGH COST OF MONITORING OF APPROPRIATE PATIENT SELECTION, REGULAR MONITORING WILL BE CONFINED TO EVALUATING PER-CAPITA USAGE RATES. TARGETED MONITORING OF HIGH USAGE AREAS WILL EVALUATE THE RESULTS OF THE PROCESS.

- REQUEST THE CENTRE FOR HEALTH POLICY AND EVALUATION TO USE THE MHSC DATA BANK TO REGULARLY UPDATE THE DATA ON THE RISKS AND BENEFITS OF COMMON OR EXPENSIVE PROCEDURES AND TO PROVIDE THE RESULTS TO MANITOBA HEALTH, THE CPSM AND THE MEDIA IN ORDER TO EDUCATE PHYSICIANS AND PATIENTS.

II.3.1 The ability to control costs also depends on knowing which treatments are valuable and which are not. The introduction of a new procedure (adding a new item to the tariff manual) or a change from one form of treatment to another has sometimes occurred without adequate proof that the new treatment is efficacious or that it does not increase risk to patients. Encouraging physicians to adopt a more conservative approach to surgery generally does not jeopardize health, particularly among the elderly, and would help contain hospital costs.

II.3.2 IT IS, THEREFORE, RECOMMENDED THAT:

- NO NEW PROCEDURE OR DIAGNOSTIC TEST BE INTRODUCED AND NO CHANGES BE MADE TO THE TARIFF MANUAL OR IN THE TYPE OF PROCEDURE USED UNLESS PRECEDED BY A CAREFULLY DESIGNED STUDY WHICH ASSESSES ITS SHORT- AND LONGER-TERM RISKS OR UNLESS THE EXISTING LITERATURE DEMONSTRATES THAT SUCH AN EVALUATION HAS ALREADY BEEN DONE ELSEWHERE.

II.4.1 Manitoba has longer average lengths of hospital stays than other jurisdictions for similar treatments and

its readmission rate following selected surgical treatments may be cause for concern. Costs will, however, only be saved by shortening stays or reducing the number of re-admissions if an equivalent number of acute beds are closed.

II.4.2 IT IS, THEREFORE, RECOMMENDED THAT:

- IN CONJUNCTION WITH THE CPSM, THE MANITOBA DATA BASE BE USED TO EXPLORE DIFFERENCES AMONG HOSPITALS IN LENGTHS OF STAY AND READMISSION RATES FOR SELECTED COMMON SURGICAL PROCEDURES AND MEDICAL ADMISSIONS.

II.5.1 Rural Manitoba hospitals without intensive care units appear to do as well as urban centres in managing heart attacks.

II.5.2 IT IS, THEREFORE, RECOMMENDED THAT:

- NO EXPANSION OF CORONARY CARE UNITS IN URBAN OR RURAL FACILITIES TAKE PLACE UNTIL THE CURRENT USE OF THESE FACILITIES IS EXAMINED AND A CAREFUL EVALUATION OF THE EFFECTIVENESS OF CORONARY CARE IS UNDERTAKEN.

II.6.1 Evidence from studies both in Manitoba and elsewhere point to the importance of closing beds in conjunction with expanding resources for outpatient surgery.

II.6.2 IT IS, THEREFORE, RECOMMENDED THAT:

- NO EXPANSION OF OUTPATIENT SURGERY OR INDEPENDENT SURGICAL CENTRES BE FUNDED UNLESS ACCOMPANIED BY ENOUGH HOSPITAL BED CLOSURES TO PRODUCE REAL COST REDUCTIONS.

II.7.1 Repair of hip fracture is a high-risk procedure for which our 30-day post-operative mortality rate is higher than that in New England. An investigation is needed to find out why.

II.7.2 Concurrent coronary bypass/valve replacement surgery is also a high risk procedure for which some of our outcomes appear to compare unfavourably with those in New England. Since this procedure is costly and is done only in the two teaching hospitals, a detailed study of the treatment received in each hospital is warranted.

II.7.3 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- ASK THE CENTRE FOR HEALTH POLICY AND EVALUATION TO LAUNCH THESE STUDIES WITH THE COOPERATION OF THE CPSM.

II.8.1 It may be time to proscribe physicians who perform less than 20 gallbladder operations per year from performing this surgery if updating confirms the results obtained from previous studies.

II.8.2 IT IS, THEREFORE, RECOMMENDED THAT:

- IF A MORE RECENT STUDY CONFIRMS PREVIOUS FINDINGS, THE CPSM SHOULD BE ASKED TO ENSURE THAT PHYSICIANS WHO DO NOT PERFORM AT LEAST 20 GALLBLADDER OPERATIONS A YEAR ARE PROSCRIBED FROM PERFORMING THIS SURGERY.

II.9.1 Physicians are generally not complying with the guidelines for Pap smear tests. MHSC can control the

cost of overtesting through financial disincentives (e.g., by informing physicians that it will not pay for tests which exceed the guidelines without justifying documentation) but it is also important to address undertesting. The programs the research team developed to assess practice patterns could be implemented at MHSC to monitor these patterns.

II.9.2 IT IS, THEREFORE, RECOMMENDED THAT:

- MHSC INFORM PHYSICIANS THAT IT WILL NOT PAY FOR PAP SMEAR TESTS WHICH DO NOT CONFORM TO THE PUBLISHED GUIDELINES UNLESS JUSTIFICATION IS PROVIDED;
- MANITOBA HEALTH ASK THE CPSM TO PROMOTE SUCH PREVENTIVE HEALTH PRACTICES AS PAP SMEAR TESTS, PARTICULARLY FOR INNER-CITY AND RURAL RESIDENTS.
- MANITOBA HEALTH ADOPT THE SYSTEM OF MAILING REMINDERS TO WOMEN WHO NEED THE SERVICE, AS IMPLEMENTED IN ANOTHER CANADIAN PROVINCE. THE SYSTEM IMPLEMENTED BY THE COMMUNICABLE DISEASE CONTROL DIRECTORATE FOR MONITORING IMMUNIZATIONS IN MANITOBA IS AN EXAMPLE OF SUCH A SYSTEM ALREADY IN PLACE IN THE PROVINCE.

SECTION III: NEED FOR AND USE OF HEALTH SERVICES BY THE ELDERLY

III.1.1 A health care "crisis" as a result of the aging of the population is not inevitable if changes in health care policies and practices are made in line with demographic trends. Research results indicate where attention must be focused to control costs.

III.2.1 The studies on physician visits demonstrate a disturbing trend. Not only has the number of visits per elderly person increased, but a major proportion of this increase in ambulatory medical services have gone to elderly persons in good health. Given physicians' ability to generate demand for a substantial portion of their services, an increasing physician supply and the fee-for-service method of payment, controlling medical service costs is difficult unless total payments are linked to the total volume of service.

III.2.2 Since the growth in physician supply also increases the pressure on hospital beds and on the acquisition of new equipment, limiting this growth could reduce these problems. The number of new undergraduate medical students has recently been reduced, but little has been done to reduce residency training programs or to alter the mix of specialists produced.

III.2.3 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- MAKE PROJECTIONS OF THE IMPACT OF CURRENT UNDERGRADUATE CLASS SIZE AND CURRENT RESIDENCY TRAINING PROGRAMS ON MANITOBA PHYSICIAN-POPULATION RATIOS.

- ADOPT POLICIES TO CONTROL THE INCREASE IN MEDICAL SERVICE COSTS. LINKING TOTAL PAYMENTS TO THE VOLUME OF SERVICES AND CHANGING BOTH THE NUMBERS OF UNDERGRADUATE MEDICAL STUDENTS AND THE NUMBERS AND MIX OF RESIDENCY TRAINING POSITIONS ARE POSSIBLE WAYS TO ACHIEVE THIS GOAL.

III.3.1 In view of the consequences for future hospital and PCH use as well as health risks, elderly persons who spend more than 37 days in hospital in any one year should be targeted for special attention.

III.3.2 SINCE MANITOBA HAS GERIATRICIANS IN MOST OF ITS REGIONS (IN CONTRAST TO THE REST OF CANADA), IT IS RECOMMENDED THAT MANITOBA HEALTH:

- IN CONJUNCTION WITH THE CENTRE FOR HEALTH POLICY AND EVALUATION AND ONE OR TWO HOSPITALS WHICH HAVE GERIATRICIANS ON STAFF, LAUNCH A STUDY TO EVALUATE WHETHER GERIATRIC ASSESSMENT AND TREATMENT OF SUCH PERSONS CAN REDUCE FUTURE HOSPITAL OR PCH USE.
- IF WARRANTED BY THE RESULTS OF SUCH A STUDY, THE CPSM SHOULD ENCOURAGE A REFERRAL OF ALL ELDERS WHO USE 37 OR MORE HOSPITAL DAYS TO A GERIATRICIAN.

III.4.1 There are several lines of evidence, including our work on physician practice style, suggesting that there is a considerable amount of physician discretion in admitting patients to hospitals, that the cost is high,

and that old age increases the risk associated with high risk procedures and long hospital stays. It is difficult to use administrative data to identify which admissions should not have been made or which physicians admit too many elderly patients to hospital. Administrative data, however, can be used to identify regions or hospital service areas which have unusually high rates of elderly admissions for certain procedures or specific diagnoses, or which have much higher than expected overall levels of elderly hospital admissions given the patient population served.

III.4.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- ADOPT THE SAME STRATEGIES AS OUTLINED IN RECOMMENDATIONS II.1.4 AND II.2.3 BUT TARGETED SPECIFICALLY AT REGIONS OR SERVICE AREAS WITH UNUSUALLY HIGH ELDERLY ADMISSION RATES IN GENERAL OR FOR SPECIFIC MEDICAL OR SURGICAL TREATMENT.

III.5.1 Expanding resources for screening or outreach programs targeted at the elderly appears unwarranted, but disease prevention and health promotion efforts directed toward the elderly should be expanded, as recommended recently by the U.S. Institute of Medicine. Preventive efforts to reduce falls among women aged 75 or more living in the community and especially those living in PCHs have been shown to yield positive results elsewhere.

III.5.2 IT IS, THEREFORE, RECOMMENDED THAT:

- THE HEALTH PROMOTION DIRECTORATE, WHOSE PROGRAMS CURRENTLY ARE LARGELY TARGETED AT YOUNGER PEOPLE, BE DIRECTED TO FOCUS SOME ATTENTION ON SPECIAL GROUPS OF ELDERLY.
- THE LONG-TERM CARE DIVISION OF MHSC BE DIRECTED TO WORK WITH THE PCHS TO DEVISE WAYS TO REDUCE FALLS IN THESE FACILITIES.

III.6.1 PCHs are admitting an increasingly greater proportion of elderly who are older and require heavy care or constant supervision. Efforts should be directed to ensuring that this trend continues as the ratio of PCH beds to persons aged 75 or older declines, because age and level of care on admission affect length of PCH stay, by making it possible for Continuing Care to keep more younger and less dependent people at home. While this would increase both PCH and home care costs, they would also reduce the cost of building and operating more PCH beds as the population aged 75 or more increases. Such an approach would also reduce future problems of an oversupply of beds when the size of the elderly population plateaus and then declines.

III.6.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- CONTINUE TO FURTHER REDUCE PCH ADMISSIONS OF PERSONS REQUIRING LIGHTER LEVELS OF CARE;
- APPROPRIATE ADJUSTMENTS BE MADE IN PCH AND CONTINUING CARE FUNDING TO REINFORCE THIS TREND.

III.7.1 To ensure that hospitals and physicians make every effort to reduce or delay PCH admissions, Manitoba Health could assume responsibility for circulating the profiles of the elderly whose combination of characteristics place them at high risk of PCH admission to each hospital and request that ambulatory and hospital patients with these profiles are given special attention. Manitoba Health could also request that the CPSM circulate this information to physicians to use in their ambulatory care practices.

III.7.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- INSTRUCT MHSC TO USE ONE OF ITS REGULAR MEETINGS WITH HOSPITAL ADMINISTRATORS TO ENCOURAGE THE USE OF THE RISK PROFILES BY THEIR ADMITTING PHYSICIANS.
- ASK CPSM TO ENCOURAGE PRIMARY CARE PHYSICIANS TO FOCUS SPECIAL ATTENTION ON ELDERLY PERSONS WITH HIGH RISK PROFILES.
- INSTRUCT THE OFFICE OF CONTINUING CARE TO ENCOURAGE STAFF TO USE THESE RISK PROFILES IN ASSESSING PERSONS REFERRED TO THE PROGRAMS FROM HOSPITAL AND FROM THE COMMUNITY.

III.8.1 Adding geriatric assessment and rehabilitation beds does not necessarily speed up access to these units by patients awaiting transfer to them from acute hospital. Winnipeg has as many or more such beds per elderly person

than most other Canadian cities. In view of the cost of geriatric units, their location in selected hospitals and the pressure on hospital beds, access to geriatric units should be based on a system like the one used by Continuing Care for access to PCHs. Such a system should be used to assess the urgency of transfer from hospital or from the community to ensure that rehabilitation starts as soon as possible. This recommendation was recently made by the Task Force on Extended Beds; the Task Force also noted that Winnipeg has an adequate supply of geriatric assessment and rehabilitation beds.

III.8.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- ADOPT THE RECOMMENDATION MADE BY THE TASK FORCE ON EXTENDED BEDS WITH REGARD TO ESTABLISHING AN ADMISSION SYSTEM FOR GERIATRIC UNIT BEDS.

III.9.1 PCH residency reduces hospital admission, but not lengths of hospital stay for PCH residents.

III.9.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- EXAMINE WHY HOSPITALS DO NOT DISCHARGE PCH RESIDENTS ANY SOONER THAN NON-RESIDENTS.

III.10.1 The small minority of elderly who use home care are sicker and more dependent than non-users, but advancing age changes the reasons for their admission to the

program from post-hospital recovery to a PCH bed substitute.

III.10.2 For the older age groups, social services are key services. Inability to carry on day-to-day chores such as housekeeping and meal preparation is, after age, the most significant predictor of need for home care; these older elderly are those most at risk of requiring PCH admission. Since home care substitutes for PCH admission, social supports should be treated as being as important as medical services.

III.10.3 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- RECOGNIZE THE IMPORTANCE OF CONTINUING CARE SERVICES AS A SUBSTITUTE FOR PCH ADMISSION AND ADJUST ITS BUDGET IN LINE WITH THE DECREASE IN THE RATIO OF PCH BEDS TO THE NUMBER OF OLDER ELDERLY.
- RECOGNIZE THE IMPORTANCE OF THE SOCIAL SUPPORT SERVICES PROVIDED BY CONTINUING CARE, ESPECIALLY AMONG THE ELDERLY AGED 75 OR MORE.

III.11.1 As expected, closeness to death is a major factor in explaining the high health care costs for some individuals. For the elderly, especially those aged 75 or more, the high cost does not appear to be simply the result of high use of hospital or physician services; the cost of their PCH residency is a major contributor. However, one-third of the dying elderly use very few

health services and research to find out the reasons might prove useful in reducing costs.

III.12.1 The work on the predictors of PCH and home care use is a potentially useful departmental planning and monitoring tool. This research is currently being exploited for planning purposes (e.g., estimating the size of the target population) by other Canadian and U.S. jurisdictions but not by Manitoba. However, the lack of information on the relationship of individuals' characteristics to the intensity of service use, owing to the current manual information system does not permit adequate cost projections.

III.12.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- CONSIDER ADOPTING THE USE OF THOSE RISK PROFILES TO ESTIMATE THE NUMBER OF FUTURE HOME CARE USERS.
- IMPLEMENT A COMPUTERIZED DATA SYSTEM WHICH WOULD PERMIT REALISTIC ESTIMATES OF FUTURE HOME CARE COSTS AND BETTER MONITORING OF THE CURRENT PROGRAM.

III.13.1 The finding that the increase in longevity is accompanied by increased dependency suggests that only an improvement in their physical and mental status may help increase the number of elderly who age "successfully", thus reducing health care use. Changing our research funding priorities to search for ways to eliminate, delay or better manage chronic, disabling diseases and to focus

on the determinants of health may prove more successful in containing costs while improving the health status of the elderly than simply providing more health care services.

III.13.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- MAKE SUCH RESEARCH A PRIORITY FOR THE MANITOBA HEALTH RESEARCH COUNCIL AND ENCOURAGE THE FEDERAL MEDICAL RESEARCH COUNCIL TO DO THE SAME.

SECTION IV: THE INCIDENCE AND PREVALENCE OF SPECIFIC DISEASES

IV.1 Two recent studies are the first to use the Manitoba data to estimate the incidence (the annual rate at which new cases of a disease are identified) and prevalence (the rate at which a disease is present in the population during the year) of a specific disease. The two diseases investigated were diabetes and dementia. The study on dementia also assessed the effect of a dementia diagnosis on PCH admission and death.

IV.2 The studies suggest that the Manitoba data can be used to advantage to estimate the incidence and prevalence of certain diseases in Manitoba.

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MANITOBA HEALTH CARE STUDIES AND THEIR POLICY IMPLICATIONS

Introduction

Manitoba is uniquely fortunate in three respects: the data files of the Manitoba Health Services Commission (MHSC) are suited to both cross-sectional (i.e., across time) and longitudinal (i.e., over time) studies on the use and outcomes of health care services; the Manitoba Studies on Aging, with their interviews of representative samples of elderly Manitobans, have made it possible to link the data on their health and psychosocial characteristics with their use of all health care services from 1970 to the present; and the province continues to have a number of researchers interested in using these data to evaluate current health care delivery practices and to assess the policy implications of these practices. As a result, these researchers have had extraordinary success in obtaining research grants over the last 15 years and in publishing many major studies of international importance that are also of particular relevance to Manitoba and Manitobans.

The publications using the Manitoba data can be divided into four broad categories:

- studies whose main purpose was to assess the quality of the data for research when the information is routinely gathered for other purposes;
- studies whose main purpose was to evaluate the quality of health care services by examining the link between needs and interventions or the link between a specific procedure or treatment and the outcome;
- studies whose main purpose was to examine the patterns of health service utilization by the general population or by specific subpopulations to identify the factors that place certain people at risk of requiring specific services or to evaluate whether the delivery of particular services is consistent with need and with the best use of Manitoba's health care resources;
- studies whose main purpose was to identify the incidence and prevalence of a specific disease in Manitoba and to assess its effect.

However, this division of the research according to its primary goal is arbitrary because some studies addressed questions relevant to more than one category. When investigations built on the results of previous research, their findings are combined for presentation.

Research is an ongoing activity of the investigators associated with the Centre of Health Policy and Evaluation. Therefore, a number of relevant studies are always in

progress. This document, however, summarizes only completed studies that were published or submitted for publication before December 31, 1990.

Each section of this document includes a brief description of the studies' findings within each category, followed by a summary and, where relevant, recommendations. The executive summary recapitulates the four summaries and all the recommendations. References for each section are listed separately at the end of the document.

SECTION I: THE QUALITY OF THE DATA

The Files

The Manitoba Health Services Commission (MHSC) maintains registration, hospital, Personal Care Home (PCH) and medical files for purposes of payment and control. The files on the use of health care service are documented in considerable detail.

The registration file provides data on the population covered and permits identification of individuals by birthdate and sex. The medical file contains the patient's scrambled identification number and postal code, the physician's coded number and such information as the diagnosis, the type of service delivered (e.g., office visit, specific surgical procedure) and the nature of the visit (e.g., primary visit or referral for consultation). Since physicians must submit a claim to receive payment, it is not likely that the data underestimate physician contact. Since physician practice profiles are routinely audited by MHSC, there is also little likelihood of a significant amount of overbilling. Tests by Roos et al. (1979) indicate that the medical claims data provide valid data on total patient-physician contact.

The hospital file is built on the basis of each admission and contains such key items as the patient's identification number (scrambled), dates of admission and discharge, the diagnoses, and diagnostic or surgical procedures. The PCH file also contains several key items such as the individuals'

identification number, the dates of admission and discharge, the PCH to which the individual was admitted and the level of care required.

Although each file is kept separately, unique patient, hospital and physician identifiers are maintained in each file so that new files can be built on individuals, physicians, hospitals or PCHs by merging existing files. Confidentiality of the data when researchers use these files is ensured by prior review by the Access and Confidentiality Committee of MHSC, by disguising identifiers, by removing individuals' names and addresses, and by submitting each research paper to MHSC which ensures that individuals are not identifiable.

Reliability and Validity

The reliability of the information on individuals in the registry and in the other files is high. In a check using survey data from interviews done in 1971 with over 4500 elderly, the age reported by the interviewer (validated by official documents when possible) and his/her age calculated from the claims files proved identical in 92% of the cases.

A check using data from the Office of Vital Statistics on 100 patients who were recorded as having died in hospital revealed that 98% of the deaths were recorded in the MHSC records. However, before 1978 a considerable amount of time elapsed before some deaths (both in and out of hospital) were recorded in the registration file. Since then, improved

organizational ties between the Office of Vital Statistics and MHSC have routinized the recording of deaths in the registry.

Reliability checks of the data on a number of surgical procedures showed a high level of agreement on the type of procedure performed. For 722 hysterectomies performed in 1974, the level of agreement between the data on the type of procedure from the hospital file and those from the medical file was 97.2%. A similar check for gallbladder operations showed that there was agreement on the procedure used for 246 of 259 cases (95%); the disagreement about the remaining 13 cases centred on whether the common bile duct was explored.

Checks comparing tariffs filed by surgeons, anesthetists and assisting physicians also showed high levels of agreement: 91% of the hysterectomy cases and 89% of the cholecystectomy cases had identical tariffs. Direct discrepancies were found in only 5% of hysterectomies and 7% of cholecystectomies.

Researchers who have focussed on the reliability of diagnoses are well aware of substantial disagreement on specific diagnoses among physicians. The diagnoses for some conditions are more reliable than for others, but an agreement level of 60-70% level is not unusual, even when physicians know that their clinical judgement is being examined. Tests comparing data on myocardial infarctions in 154 patients aged 59 years or more over a two-year period indicated that there was agreement on a diagnosis of serious coronary problem between the medical records of the hospital and the MHSC hospital file in 152 of the 154 cases. Similarly, a check

using the medical records of one Winnipeg hospital and the MHSC hospital file showed that there was 95% agreement on the diagnosis of gallbladder patients. Thus, the level of agreement on serious operations and life-threatening conditions appears high.

Other checks of the data done in conjunction with specific studies confirmed the general validity of the claims data. Examples: 1) Since neither pregnancy nor disease of the uterine cervix can logically follow a hysterectomy, a check on the diagnosis for such visit revealed a 1-2% error rate; and 2) menopausal symptom increased after hysterectomy but not after cholecystectomy.

Reliability checks have identified certain types of problems with the claims data. For physician visit claims within a 14-day period for patients who subsequently had a cholecystectomy in 1974, the diagnosis of cholelithiasis had 84% intraphysician and 59% interphysician reliability. Poor reliability was found for diagnoses which were "catch-all" categories, such as "miscellaneous disease of the digestive system". However, as might be expected, a less specific diagnosis was more often given by the first physician seen than by the second physician visited. Eliminating claims when the diagnosis of one physician was in the miscellaneous category raised the level of interphysician reliability to 73%. Here, as in the data on respiratory disease, the best results were obtained by grouping three-digit ICD (International Classification of Diseases) diagnostic codes.

It has been the practice to routinely and carefully check for the reliability of the diagnosis and other data in conjunction with the specific research being undertaken. The final decision is then made whether to include or exclude the data, and the reliability limits are then reported in the publication.

Numerous studies attest to the high quality of the data and to their superiority, for certain purposes, to other, more costly methods, such as primary data collection. A comparison between the power of indicators developed from the Manitoba data and the power of interview data in predicting important health outcomes such as death, hospital admission and nursing home admission revealed that the two sets of data provided similarly accurate predictions of nursing home admission, but the administrative data predicted death and hospital admission significantly better. Another study by Abrams et al. (1988) reported that an approach combining decision analysis with MHSC data was useful as an alternative or precursor to randomized trials in determining the need for early surgery for infective endocarditis. A third study showed that computerized algorithms developed from MHSC data to identify complications following hysterectomy, cholecystectomy and prostatectomy had high specificity, sensitivity and predictive value when compared with clinical decisions by physician panels.

Two studies for the U.S. Office of Technology Assessment in cooperation with Dr. N. P. Roos have investigated the value

of the Manitoba claims data in assessing the costs, risks and benefits of specific surgical procedures. They found that using the Manitoba data for these assessments is both effective and inexpensive compared with other methods.

Several studies on which comparisons between the loss to follow-up using the MHSC data and studies using primary data collection (which is both more expensive and more intrusive) indicated that the follow-up in the Manitoba studies compared favourably with that of primary collection studies and that, because records can be flexibly organized over time, the Manitoba data can be used for some types of research which could not be done using other methodologies. Not only was follow-up as good or better than these studies but the results found were similar (thus further validating the method).

Summary

I.1 The use of routinely gathered MHSC data for research purposes has important advantages. It is often far less expensive than studies using clinical trials or surveys. It is nonintrusive. For some purposes, it is more reliable than survey data which depend on the interviewer's recollection of events. It permits the study of health care both cross-sectionally and longitudinally, and emphasizes population-based (epidemiological) analyses rather than simply counting the cases from tertiary care hospitals. This expands the applicability of the findings to the situation as it

exists in community hospitals, not merely those results seen in teaching hospitals.

I.2 Population-based research helps ensure that the results can be provided to policymakers and planners with sufficient confidence that the descriptions are accurate representations of conditions in the province. The ability to study contacts with the health care system over time leads to greater accuracy in the assessment of outcomes. Analyses that do not have a population-based focus may miss important events which occur after the patient is discharged from hospital. In Manitoba, the relative percentage of short-term readmissions to hospitals other than the first hospital is significant. Thus, population-based data provide a perspective beyond that generated by single-hospital data.

I.3 Checks of the Manitoba data bank done over many years and in conjunction with many studies indicate that the data are of high quality, compare favourably with data obtained by other methods in terms of reliability and validity, and can be used for a variety of purposes. These checks also clearly point out which data must be treated with caution and under what conditions the data can be used to best advantage.

The generally high quality of the data is supported by comparisons with other data sources, by the judgement of highly-respected external investigators who have been involved in collaborative research and by the

international recognition with which the published research has been received.

SECTION II: NEED, INTERVENTION AND OUTCOMES

A. Regional Variations and the Need for Surgical Intervention

The view that medical practice implies a clear linkage between needs and interventions is inconsistent with the results of extensive research in Canada, the U.S. and Western Europe. The reality is that opinions within the medical profession differ widely as to how conditions should be diagnosed and treated. Rates of specific interventions vary from region to region, from hospital to hospital, and from physician to physician.

Manitoba studies, in common with research findings elsewhere, show substantial variations in the rates of surgical procedures performed in different areas of the province. The main surgical interventions studied were common procedures such as tonsillectomies, cholecystectomies, prostatectomies, herniorrhaphies, tubal sterilizations and hysterectomies. However, since these studies were done at different points in time over the last decade, some may need to be updated using more recent data or be checked against the findings of more recent studies done elsewhere to confirm their current relevance.

The results showed that most of these variations cannot be explained by underlying health status differences between area residents, that is, by differences in need. Instead, they are the result of differences in the practice style of

the physicians working in the area. Left undisturbed by audit or by the migration of physicians, the surgical "signature" of an area tends to remain constant over time. The in-migration of a surgically active physician to a specific area has been shown to increase the proportion of the area's population coming to surgery.

Regional variations can best be illustrated by two examples. Taking age and sex distribution into account, the rate at which gallbladder operations were performed was lowest in Winnipeg and Thompson and highest in Brandon and in the Parklands Region. Similarly, another study found that 1 1/2 times as much surgery on the elderly was performed in high rate surgical areas than in low rate areas, indicating that place of residence strongly influences the elderly patient's exposure to surgery.

These differences in surgical rates have implications both for government costs and for the health of Manitoba's elderly. Patients aged 85 or more have hospital stays almost twice as long as those aged 65 to 74 and their post-operative mortality rate is three times as high. Patients with multiple diagnoses (i.e. with more than one health condition) have death rates four times higher than patients with a single diagnosis. Although high risk patients are not more prevalent in areas with high surgical rates, those who live in areas with high rates are more likely to undergo surgery than high risk patients living in areas with low rates.

Regional differences in surgical rates are cause for serious concern for four main reasons. First, the risks associated with some operations are high and these risks are usually underestimated when patients are followed up for only a short period of time after treatment. In fact, patients generally experience more adverse outcomes than physicians are aware of because most published studies focus only on what happens to patients while in hospital or during a relatively short period afterwards. When patients are tracked after they leave hospital and, when relevant, over a long period after treatment, a different picture emerges. Second, the excess treatment costs are high in areas with high surgical rates and no clearly identifiable health benefit is achieved. Third, hospital-based surgical and medical treatment is the most costly health care service. Fourth, hospital patients, particularly the elderly, run the risk of contracting iatrogenic illnesses. It is, therefore, imperative to evaluate the outcomes of physician practice styles and to implement policies to ensure appropriate monitoring and feedback to address these variations in practice styles.

B. Need, Quality of Care, Risks and Benefits of Specific Treatments

Studies commonly referred to as outcome studies seek to answer four questions: Is the treatment needed, i.e., does it meet acceptable standards for determining that the individual required the treatment? Is the rate at which the treatment is

provided about the same as or different from the rate at which the treatment is provided elsewhere? What are the outcomes of treatment, and how do they compare with outcomes elsewhere (i.e., quality of care)? What does the incidence of adverse outcomes tell us about the risks associated with the treatment? Most, but not all, of the Manitoba studies have focussed on surgical procedures.

Tonsillectomy and Adenoidectomy

Overall surgical rates for tonsil/adenoid surgery in Manitoba are about the same as those in the U.S. The risks associated with the surgery are low, but so are the benefits. Children who have three or four respiratory episodes a year and who subsequently undergo surgery have 1.5 fewer such episodes in the two years after surgery. Given the cost of the operation and convalescence, surgery for such children seems generally unwarranted. Justifying surgery for children with only one or two episodes is particularly difficult in view of the small benefits yielded by the surgery.

Therefore, a conservative approach appears justified. The results of U.S. studies (Paradise, 1975; Paradise and Bluestone, 1976), have led to a recommendation that the criterion for surgery should be having five or more respiratory episodes in the previous year. Since these guidelines for patient selection were recommended about a decade ago, more recent literature should be reviewed to confirm their continued relevance.

Hysterectomy

Surgical rates for hysterectomy between 1970 and 1978 initially rose sharply and then gradually declined, as did lengths of hospital stay. Between 1970 and 1978, Manitoba had one of the lowest hysterectomy rates in Canada.

There was a marked reduction in the proportion of women hospitalized for gynecological disorders following the operation. There was also a small but persistent reduction over time in the number of physician visits for gynecological problems, and by the second year after surgery, the rate of physician visits for anemia resulting from excessive menstrual bleeding fell to the same rate as that of age-matched women in the general population. However, women who had hysterectomies still visited physicians more frequently for gynecological problems two years after surgery than did age-matched women. Furthermore, although women made fewer visits to the doctor for gynecological problems after surgery, they made more visits for psychological problems, urinary tract infections and menopausal symptoms than did the age-matched groups.

The risk of mortality as a result of the surgery and associated repair problems is low and is similar to that in the U.S. but there is a significant risk (40 per 1,000 cases) of complications necessitating readmission to hospital during the next two years. While most of these complications are not life threatening, the average lengths of hospital stay they entail is substantial.

The stability in the pattern of physician visits before and after hysterectomies casts doubt on the assertion that the procedure consistently improves the quality of life. The findings suggest that both the physician and the patient should carefully weigh the risks and benefits of non-mandatory, non-emergency hysterectomy before deciding on surgery.

Tubal Ligation

The number and rates of tubal ligation rose dramatically in Manitoba betwen 1970 and 1973 and then stabilized, a pattern similar to that in the rest of Canada and in the U.S. In 1982, however, by age 45, 60% of Manitoba women of childbearing age had been sterilized as a result of having undergone either hysterectomy or tubal ligation. Lengths of hospital stay for tubal ligation fell over the years but almost one-third of the women stayed in hospital for over four days. Shorter stays were the result of undergoing the procedure in an urban hospital and the use of laparoscopy. This suggests that many unnecessary days of hospital stay could be avoided by making laparoscopy available to rural women. However, the low bed-occupancy rates and limited funding of rural hospitals suggest that the cost savings may be minimal.

The risks associated with tubal ligation are generally low. However, women aged 25 to 29 who have had the procedure

are at significantly greater risk than other women of subsequently having a hysterectomy.

Prostatectomy

Prostatectomy is one of the most frequently performed major surgical operations. Surgical rates are similar to those in the U.S. Two types of surgery are done: open prostatectomy and transurethral prostatectomy.

Prostatectomy has been considered a safe procedure, particularly when performed transurethrally, even for elderly men. However, population-based longitudinal studies in Manitoba and in the U.S. have found that long-term mortality associated with this procedure was markedly higher than previously assumed from hospital-based studies.

Postoperative mortality rates in Manitoba are lower than those reported for a similar U.S. population using similar population-based data. The post-operative mortality rates within 6 weeks after surgery were higher for patients undergoing open rather than transurethral prostatectomy but 90-day mortality rates were similar (2.7% and 2.5% respectively). Fifty-nine percent of the deaths occurred after discharge from hospital. Age was a strong predictor of mortality: men aged 75 or more were five times as likely to die as younger men. The high rate of repeat surgery means that men are exposed twice to the same surgical risks which are not inconsequential.

Nonfatal complications were common for both surgical approaches within two years after surgery, but 65% of the patients had no surgery-related problems within this period.

The risk of undergoing a second prostatectomy within 8 years of the first surgery was high, especially if the surgery was transurethral. Studies done in Manitoba, the United States, Denmark and England also show a much higher risk of a second operation after transurethral than after open prostatectomy. 16.8% of patients who had transurethral surgery had subsequent prostate surgery, compared to 5% to 7% of those who underwent an open procedure. Also, 1.2% of patients who had the transurethral procedure had a third or fourth prostatectomy. Even after controlling for age, case-mix and other factors, men undergoing transurethral surgery were just over five times more likely than those undergoing a suprapubic procedure to require revision and to undergo surgery at least once more.

These findings indicate that the costs and risks associated with transurethral surgery are significant and that reoperation rates are higher than was previously assumed. Yet this operation is generally an elective procedure and is usually performed on persons with a range of symptoms from mild to severe. It therefore appears advisable for physicians to be more selective in advising prostate surgery and in using this procedure.

The findings also highlight the problem of the lack of systematic evaluation of surgical practice. The change from

open to transurethral prostatectomy to the point where less than 15% of men undergo the former procedure has taken place on the basis of very limited evidence about the appropriateness of the change.

Cholecystectomy

Cholecystectomy (gallbladder surgery) is also one of the most frequently performed elective surgical procedures and is much more often performed on women than on men. There are two opposing views as to the benefits of gallbladder surgery for nonemergency cases. Some physicians argue that "preventive" surgery performed on otherwise healthy young patients obviates the need for surgery when patients become symptomatic at an older age when the surgery is riskier. Non-interventionists argue that many people lead normal lives with silent or minimally symptomatic stones and that the financial implications of preventive surgery are substantial, since autopsies suggest that 10% to 20% of the population have gallstones but never have significant problems.

The post-operative death rate during the hospitalization for surgery was low. However, post-operative mortality was much higher for persons aged 65 or more (3.2% for males, 2% for females) than for younger persons and for persons operated on by specialists in rural centres than for those who underwent surgery in Brandon or Winnipeg. However, these mortality rates, based only on the period immediately following surgery, likely understate the risks (e.g.

mortality, rehospitalization, complications) because the study was confined to the immediate post-operative period.

An analysis of the patient, surgeon and hospital characteristics associated with serious postdischarge complications after gallbladder surgery indicated that, after controlling for case-mix and type of surgery, the physician's surgical experience was a significant contributor to the likelihood of complications. Patients operated on by physicians who performed an average of 20 or fewer procedures a year over a 3-year period were almost twice as likely as patients of physicians who did more of this surgery to have postoperative complications.

A study comparing age-adjusted cholecystectomy rates from 1972 to 1984 for Natives and non-Native Manitobans revealed that rates for Native females was higher than for non-Natives and that the highest rate was for Native females aged 30 to 39 while the highest rate for non-Native females was at age 60 to 69. Surgery rates for men were three times lower than those for women and no differences were found between Native and non-Native males. A key finding of this study was that, even when sociodemographic factors (e.g., age, sex and urban/rural residency), case-mix and type of hospital are taken into account, rehospitalizations for surgical complications were 1.5 times higher for Natives than for non-Natives.

Total Hip Replacement

Total hip replacement surgery increased steadily in Manitoba between 1973 and 1978, at a rate similar to that in the U.S. Although specialized orthopedic services are concentrated in two urban centres, access to surgery was generally no different for urban and non-urban residents.

Over the period studied, mortality within six weeks after surgery decreased from 2.4% to 0.6% and lengths of hospital stay (including the stay in a rehabilitation unit) decreased from 54 to 40 days. Within two years after surgery, 4% of the patients had complications requiring rehospitalization as a result of the surgery and 2.7% had to have the operation repeated on the same hip. The risks associated with total hip replacement surgery are, therefore, significant and the financial costs due to the long hospital stay are high. However, physician visits for related complaints decreased in the two years following surgery.

Arthritis or arthritis-related problems are the most common complaints of patients in the two years before the surgery, and those undergoing this procedure are usually an otherwise healthy group. The fact that physician and chiropractor visits decreased in the two years after surgery compared with the two years before suggests that the procedure improves the patients' quality of life. However, because the risks are not trivial and the costs are high, careful selection of persons for surgery is indicated.

Cross-National Comparisons for Eleven Surgical Procedures

A comparison between post-surgical mortality in Manitoba and New England for 11 surgical procedures performed on persons aged 65 or more was used to see whether the higher hospital expenditures in New England than in Manitoba resulted in better outcomes for New England patients. From 1980 to 1986, surgical rates for coronary artery bypass surgery, valve replacement surgery and carotid endarterectomy were markedly higher in New England than in Manitoba, but the Manitoba rates for the first two types of surgery increased substantially between 1983-1986. On the other hand, surgical rates for prostate and gallbladder surgery were markedly higher in Manitoba than in New England. Surgical rates for total hip replacement and for repair of hip fractures were similar.

After controlling for case-mix, outcomes within 30 days and six months after surgery for low mortality procedures such as simple gallbladder surgery and moderate mortality procedures such as coronary artery bypass surgery were better in Manitoba than in New England. For the two high-risk procedures, repair of hip fracture and concurrent valve replacement/bypass surgery, the outcomes favoured New England. However, the declining mortality rate for these two procedures in Manitoba between 1983 and 1986 suggests that the difference in 6-month mortality rates has disappeared. However, the 30-day mortality rates for these high-risk procedures still favour New England.

Since hospital expenditures have their greatest effect on short-term mortality, the lack of significant differences in 30-day mortality for the nine low- and moderate-risk procedures suggests that the higher expenditures in the U.S. do not lead to better quality of care relative to these procedures. The main questions then relate to the quality of care associated with repair of hip fractures, and possibly with concurrent valve replacement/coronary bypass surgery.

The higher short-term mortality for hip fracture repair in Manitoba is not likely to be due to differences in severity because the procedure is unavoidable for hip fractures and because the incidence of hip fractures is about the same in both regions. Manitoba does more surgery on the very old than New England; however, the results are the same even if the very old are omitted from the analyses. The difference may be due to geographic factors: Manitobans are more likely to require transportation to the two urban centres, with consequent delay in treatment or to be treated in hospitals which have insufficient volume to ensure high quality care. Further investigation to assess the reasons for these differences in short-term death rates after hip fracture repair is needed.

The significantly higher mortality rates within 30 days after concurrent bypass/valve replacement surgery in the province also suggest the need for further study. The data are somewhat inconclusive because the outcomes of bypass surgery alone and valve replacement surgery alone are at least

as good in Manitoba as in New England. Since cardiovascular surgery is performed exclusively in two urban hospitals and the procedure is expensive, a study should be launched to find out whether this pattern still applies.

Physician Practice Style

The economic implications of physician hospitalization style are large: physicians who are high hospitalizers serve about one quarter of Manitoba patients, but their patients use 42% of all hospital days even when the severity of their illnesses is considered. Physicians located in rural areas with high bed/population ratios and low occupancy rates were particularly high users of hospitals. Although rural hospitals with low occupancy rates are funded at a more modest level than other facilities, consideration should be given to closing these beds or converting them to other uses.

Estimates of Bed Availability

We now have the capacity to develop accurate bed/population rates for both inpatient and outpatient hospital services based on actual use by residents in each area rather than based solely on the number of beds per population in each geographic catchment area.

Outpatient Surgery

Between 1974 and 1978, rates of outpatient surgery in Manitoba increased by 50%. In British Columbia, outpatient

surgery increased 121% between 1974 and 1983. Variations in physician practice styles also account for variations in outpatient surgery. Furthermore, recent U.S. studies show that an increase in outpatient surgery has been accompanied by an increase, not a decrease, in inpatient surgery of other types, with the result that there has been little or no cost saving. However, if beds are closed as outpatient surgery increases, cost savings may be realized.

In Manitoba, if the hospital with the highest rate of outpatient surgery were used as a standard for the other seven largest hospitals in the province in 1983, about 17 hospital beds might be closed. If more procedures, such as cataract surgery, were performed on an outpatient basis, even more beds could be closed.

Is Waiting for Cardiac Catheterization Dangerous to Health?

Need and quality of care were examined in a recent study which took an approach quite different from that of studies which focus on evaluating outcomes of procedures. This investigation used the waiting list for cardiac catheterization in one teaching hospital to find out what happens when demand exceeds capacity. Two questions were addressed: Do persons with the most urgent need receive treatment the fastest? What are the risks of morbidity and mortality associated with waiting and with the categorization of persons on the waiting list according to the degree of urgency associated with their need for surgery? Although the

study was not designed to assess the appropriateness of catheterization, ongoing research suggests that levels of appropriateness in Manitoba are high. (It should be noted that not all catheterization patients will be candidates for surgery.)

The persons on the waiting list were categorized as needing "immediate care" or "elective care", on the basis of their characteristics and indications for cardiac catheterization. The observation period was about 18 months.

Immediate care patients were found to come to surgery more rapidly than elective care patients and the most symptomatic patients in both groups came to surgery faster than asymptomatic patients. The average waiting period for elective care patients was just over four weeks.

During the waiting period, less than 4% of the elective cases experienced functional deterioration and/or a change in their symptomatology. The mortality data generally correspond to international standards. Two persons (0.4%) died awaiting catheterization. Eight patients, including four infants in the intermediate care group, died in hospital after catheterization. One additional person (0.2%) died after catheterization while awaiting surgery.

The results of the study indicate that patients identified as "urgent" come to surgery sooner than those whose need is less urgent and that the health risks associated with waiting are being minimized.

Rural/Urban Outcomes of Treatment of Heart Attacks

A comparison between the mortality rates for acute myocardial infarction (heart attack) in Manitoba's rural hospitals, none of which had intensive care units, and urban hospitals, all of which had such units, revealed that there were no statistically significant differences between them. For persons with an unequivocal diagnosis, 14% of those in urban hospitals and 15% of those in rural hospitals died; for persons with a possible heart attack, the rates were 41% and 45% respectively. It therefore appears that the expansion of intensive care units in rural hospitals to reduce mortality from heart attacks is questionable and that any requests for expansion of such units in urban hospitals should be scrutinized closely.

Physician Compliance with Guidelines for "Pap Smear" Tests

A series of very recent studies examined which type of physicians carry out this effective preventive health practice and assessed the extent to which physicians comply with the guidelines outlined in the Canadian Task Report on Cervical Cancer Screening (The Walton Report of 1982). Sixty-two percent of Pap tests are done by general practitioners (40% by urban physicians, 22% by rural physicians), 33% by gynecologists and the rest by other physicians. Manitoba-trained physicians perform the highest rate of Pap testing and the average number of tests performed increased with the age of the physician until age 60.

Compliance with the published guidelines was poor. 55.7% of the women were tested appropriately; 15.1% were overscreened, and 29.2% were undertested. The factors associated with poorer compliance were being a gynecologist and having a high proportion of inner-city or rural patients in the practice.

Continuity of Care

Two studies used the data on tonsil/adenoid surgery to find out whether continuity of care (using the same physician over time) contributes to quality of care and whether group practitioners provide higher-quality care than solo practitioners. Neither continuity of care nor type of practice (group versus solo) positively affected quality of care by this measure.

In addition, diseconomies of scale were found in large group practices. General practitioners in multispecialty groups had markedly smaller practice loads than those in solo practice. One possible explanation is that such groups may attempt to compensate for lower productivity by providing more expensive services. Another possibility is that large groups may attract physicians who prefer a slower pace, steady hours or longer vacations.

Anesthesia and Operative Mortality

In a study assessing the role of anesthesia in deaths which occurred within seven days of its administration during

surgery at the Health Sciences Centre, the risk of death associated specifically with anesthesia was found to be very low. Important predictors of death were the patient's health, sex and age and whether a procedure was emergent or major.

Summary and Recommendations

II.1.1 The Manitoba studies highlight a number of issues which need to be addressed: variations in surgical rates between areas of the province, differences of opinion among physicians in selecting patients for elective surgery, the underestimation of risk and possible overestimation of benefits associated with some procedures, and the adoption of new procedures before their risks and benefits are thoroughly studied.

These studies were carried out over some length of time. Therefore, the recommendations made in regards to these issues assume that the information on specific procedures will be updated when necessary before action is taken.

The strategies proposed to deal with these issues are based on the principle that professional and scientific approaches are preferable to administrative or punitive measures.

II.1.2 A significant proportion of hospitalizations do not fit a model based solely on medical need. Physician practice style and the way in which physicians deal with medical uncertainty are major contributors to differences

in hospital admission rates between geographic areas. (A list of medical and surgical hospital admissions with low, moderate, high and very high variability is included in "Managing Surgical Admissions", Roos and Roos, 1988.) High and very high variability in admission rates can be very costly when a procedure is commonly performed and, therefore, results in a large number of admissions or when the admission involves a less frequently performed but expensive medical service and a relatively long hospital stay. Patients in high-rate areas may also be at greater risk because physicians practising in these areas appear to do more surgery on high-risk patients.

II.1.3 A strategy of identifying areas in which physicians perform specific procedures at a much higher than average rate adjusting for area population characteristics, feeding back the information to the local physicians, and monitoring the results has resulted in lower admission rates elsewhere in North America. The evidence also suggests that the best results are achieved when the feedback process involves a physician who specializes in performing the procedure in question and who is highly regarded by his/her peers.

II.1.4 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- USE THE COMPUTER SOFTWARE PROGRAM DESIGNED FOR MHSC BY DR. L. ROOS TO IDENTIFY AREAS WITH A HIGH RATE OF SPECIFIC SURGICAL INTERVENTIONS COMPARED WITH MOST OTHER

AREAS IN MANITOBA; COMPARISONS WITH THE REST OF CANADA AND ELSEWHERE MAY ALSO BE APPROPRIATE;

- ASK THE COLLEGE OF PHYSICIANS AND SURGEONS OF MANITOBA (CPSM) TO WORK WITH THE DEPARTMENT TO ESTABLISH A COMMITTEE FOR EACH SPECIFIC PROCEDURE. THE COMMITTEES WOULD FEED BACK INFORMATION ON AREA RATES TO THE PHYSICIANS BY APPOINTING A HIGHLY-RESPECTED PHYSICIAN OR A GROUP OF PHYSICIANS TO BE INVOLVED IN THE FEEDBACK PROCESS. THE COMMITTEES WOULD ALSO EXPLORE REASONS TO ACCOUNT FOR VERY HIGH AND VERY LOW RATE AREAS WITH AREA PHYSICIANS;
- INFORM THE PHYSICIANS THAT THEIR FUTURE PRACTICE STYLE WILL BE MONITORED TO APPRISE THE CPSM IF CHANGE TAKES PLACE.

II.2.1 Medical uncertainty also probably underlies the differences among physicians in deciding which patients will benefit from a specific elective surgical procedure. Selecting the "right" patients for surgery is important not only to control costs by reducing the number of procedures performed but also, perhaps more importantly, as a means to reduce the number of poor outcomes from high risk procedures.

II.2.2 In some instances, encouraging adherence to existing guidelines may help resolve differences, and subsequent routine monitoring can be used to assess the need for additional follow-up. In other instances, however,

conservative selection criteria will need to be established and disseminated.

Evidence elsewhere also suggests that greater dissemination of information to patients on the risks and benefits of a specific procedure helps reduce their demand for elective surgical intervention.

II.2.3 IT IS, THEREFORE, RECOMMENDED THAT:

- FOR PROCEDURES FOR WHICH GUIDELINES ON PATIENT SELECTION EXIST (E.G., TONSILLECTOMY), MANITOBA HEALTH INVITE THE CPSM AND THE M.M.A. TO PARTICIPATE IN A STUDY TO ASSESS THE DEGREE OF PHYSICIAN ADHERENCE TO THE GUIDELINES WITH A VIEW TOWARDS FOLLOWING UP ON NON-CONFORMING PHYSICIANS.

- FOR PROCEDURES SUCH AS ELECTIVE PROCEDURES WHICH HAVE QUESTIONABLE BENEFITS OR RELATIVELY HIGH RISK (E.G., HIP REPLACEMENT, TRANSURETHRAL PROSTATECTOMY, AND HYSTERECTOMY), MANITOBA HEALTH ASK THE CENTRE FOR HEALTH POLICY AND EVALUATION TO IDENTIFY QUALIFIED EXPERTS WHO CAN COLLABORATE WITH THE CPSM TO CONVENE A SMALL WORKING GROUP TO REVIEW THE LITERATURE, COORDINATE ITS WORK WITH INTERNATIONAL EFFORTS AND USE BOTH LOCAL AND OUTSIDE EXPERTS TO DEVELOP A CONSENSUS ON CONSERVATIVE BUT APPROPRIATE CRITERIA FOR PATIENT SELECTION AFTER WHICH THE AGREED-UPON CRITERIA WOULD BE SHARED WITH PHYSICIANS PERFORMING THE SPECIFIC PROCEDURES. IN VIEW OF THE HIGH COST OF MONITORING OF APPROPRIATE PATIENT SELECTION, REGULAR MONITORING WILL BE CONFINED TO EVALUATING PER-

CAPITA USAGE RATES. TARGETED MONITORING OF HIGH USAGE AREAS WILL EVALUATE THE RESULTS OF THE PROCESS.

- REQUEST THE CENTRE FOR HEALTH POLICY AND EVALUATION TO USE THE MHSC DATA BANK TO REGULARLY UPDATE THE DATA ON THE RISKS AND BENEFITS OF COMMON OR EXPENSIVE PROCEDURES AND TO PROVIDE THE RESULTS TO MANITOBA HEALTH, THE CPSM AND THE MEDIA IN ORDER TO EDUCATE PHYSICIANS AND PATIENTS.

II.3.1 The ability to control costs also depends on knowing which treatments are valuable and which are not. The introduction of a new procedure (adding a new item to the tariff manual) or a change from one form of treatment to another has sometimes occurred without adequate proof that the new treatment is efficacious or that it does not increase risk to patients. Encouraging physicians to adopt a more conservative approach to surgery generally does not jeopardize health, particularly among the elderly, and would help contain hospital costs.

II.3.2 IT IS, THEREFORE, RECOMMENDED THAT:

- NO NEW PROCEDURE OR DIAGNOSTIC TEST BE INTRODUCED AND NO CHANGES BE MADE TO THE TARIFF MANUAL OR IN THE TYPE OF PROCEDURE USED UNLESS PRECEDED BY A CAREFULLY DESIGNED STUDY WHICH ASSESSES ITS SHORT- AND LONGER-TERM RISKS OR UNLESS THE EXISTING LITERATURE DEMONSTRATES THAT SUCH AN EVALUATION HAS ALREADY BEEN DONE ELSEWHERE.

II.4.1 Manitoba has longer average lengths of hospital stays than other jurisdictions for similar treatments and its readmission rate following selected surgical treatments may be cause for concern. Costs will, however, only be saved by shortening stays or reducing the number of re-admissions if an equivalent number of acute beds are closed.

II.4.2 IT IS, THEREFORE, RECOMMENDED THAT:

- IN CONJUNCTION WITH THE CPSM, THE MANITOBA DATA BASE BE USED TO EXPLORE DIFFERENCES AMONG HOSPITALS IN LENGTHS OF STAY AND READMISSION RATES FOR SELECTED COMMON SURGICAL PROCEDURES AND MEDICAL ADMISSIONS.

II.5.1 Rural Manitoba hospitals without intensive care units appear to do as well as urban centres in managing heart attacks.

II.5.2 IT IS, THEREFORE, RECOMMENDED THAT:

- NO EXPANSION OF CORONARY CARE UNITS IN URBAN OR RURAL FACILITIES TAKE PLACE UNTIL THE CURRENT USE OF THESE FACILITIES IS EXAMINED AND A CAREFUL EVALUATION OF THE EFFECTIVENESS OF CORONARY CARE IS UNDERTAKEN.

II.6.1 Evidence from studies both in Manitoba and elsewhere point to the importance of closing beds in conjunction with expanding resources for outpatient surgery.

II.6.2 IT IS, THEREFORE, RECOMMENDED THAT:

- NO EXPANSION OF OUTPATIENT SURGERY OR INDEPENDENT SURGICAL CENTRES BE FUNDED UNLESS ACCOMPANIED BY ENOUGH HOSPITAL BED CLOSURES TO PRODUCE REAL COST REDUCTIONS.

II.7.1 Repair of hip fracture is a high-risk procedure for which our 30-day post-operative mortality rate is higher than that in New England. An investigation is needed to find out why.

II.7.2 Concurrent coronary bypass/valve replacement surgery is also a high risk procedure for which some of our outcomes appear to compare unfavourably with those in New England. Since this procedure is costly and is done only in the two teaching hospitals, a detailed study of the treatment received in each hospital is warranted.

II.7.3 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- ASK THE CENTRE FOR HEALTH POLICY AND EVALUATION TO LAUNCH THESE STUDIES WITH THE COOPERATION OF THE CPSM.

II.8.1 It may be time to proscribe physicians who perform less than 20 gallbladder operations per year from performing this surgery if updating confirms the results obtained from previous studies.

II.8.2 IT IS, THEREFORE, RECOMMENDED THAT:

- IF A MORE RECENT STUDY CONFIRMS PREVIOUS FINDINGS, THE CPSM SHOULD BE ASKED TO ENSURE THAT PHYSICIANS WHO DO

NOT PERFORM AT LEAST 20 GALLBLADDER OPERATIONS A YEAR ARE PROSCRIBED FROM PERFORMING THIS SURGERY.

II.9.1 Physicians are generally not complying with the guidelines for Pap smear tests. MHSC can control the cost of overtesting through financial disincentives (e.g., by informing physicians that it will not pay for tests which exceed the guidelines without justifying documentation) but it is also important to address undertesting. The programs the research team developed to assess practice patterns could be implemented at MHSC to monitor these patterns.

II.9.2 IT IS, THEREFORE, RECOMMENDED THAT:

- MHSC INFORM PHYSICIANS THAT IT WILL NOT PAY FOR PAP SMEAR TESTS WHICH DO NOT CONFORM TO THE PUBLISHED GUIDELINES UNLESS JUSTIFICATION IS PROVIDED;
- MANITOBA HEALTH ASK THE CPSM TO PROMOTE SUCH PREVENTIVE HEALTH PRACTICES AS PAP SMEAR TESTS, PARTICULARLY FOR INNER-CITY AND RURAL RESIDENTS.
- MANITOBA HEALTH ADOPT THE SYSTEM OF MAILING REMINDERS TO WOMEN WHO NEED THE SERVICE, AS IMPLEMENTED IN ANOTHER CANADIAN PROVINCE. THE SYSTEM IMPLEMENTED BY THE COMMUNICABLE DISEASE CONTROL DIRECTORATE FOR MONITORING IMMUNIZATIONS IN MANITOBA IS AN EXAMPLE OF SUCH A SYSTEM ALREADY IN PLACE IN THE PROVINCE.

SECTION III: NEED FOR AND USE OF HEALTH SERVICES BY THE ELDERLY

Merging the information from the 1971, 1976 and 1983 Aging in Manitoba studies with the data from MHSC files and from Continuing Care files has permitted researchers to study patterns of health services utilization by the elderly across time and over time, the relationship between the sociodemographic and health characteristics of the elderly and their use of services, the extent to which the use of specific types of services substitute for others, the difference in the use of health services between one cohort of elderly and later cohorts, and the effect of bed, physician supply and physician practice style on the use of services.

Some investigations focussed on the use of a specific service, others on the use of several different types of service. To facilitate the process of examining the implications of the findings, this section is presented by topic rather than by specific studies.

Physician Services

A 1970-1972 study found the elderly made an average of 5.4 physician visits (including visits resulting from referrals for consultation) per year, a frequency somewhat higher than noted in one U.S. survey (4.2) and somewhat lower than reported in another (6.4).

Twenty percent of the elderly did not visit a doctor during the year, but 9% of them accounted for just over one-third of all the visits. Referred visits to consultants were less frequent than among younger Manitobans. Since health status declines with advancing age, this finding might represent underservicing of the elderly or overservicing of younger people with regard to specialists. The use of ambulatory care by elderly individuals remained quite stable over time: 60% of the elderly visited physicians at a similar frequency for six of the next eight years.

The use of ambulatory care increased with age, but not significantly, when examined at one point in time. Females, residents in Elderly Persons Housing or PCHs, individuals rating their health as fair, poor or bad and persons with more health problems visited the doctor more often than others of the same age.

Retired elderly were not more likely to visit a physician than those whose health status was about the same but who continued working. Rural and urban elderly showed generally similar visitation patterns. However, elderly persons who visited chiropractors used more, not less, ambulatory physician services than those who did not visit chiropractors.

Because of the frequent proposals for the funding of screening or outreach services to the elderly, a specific study focussed on finding out which elders do not visit a doctor for two years and whether this behaviour jeopardizes their health. These non-users tend to be single, less

educated and have some cognitive impairment, but they are generally healthy. Their non-use of ambulatory care does not lead to earlier death or hospitalization over the next seven years when compared with persons who made four or more physician visits over the same two-year period. Thus, there appears to be no demonstrable need for medical or nursing outreach programs for elderly Manitobans.

Two studies, one comparing the 1976 cohort of elderly with the 1971 cohort, the other comparing the 1983 cohort to the 1971 cohort show a disturbing trend in the use of physician services. The first study comparison followed each group's patterns of use for almost nine years.

Taking health status into account, the 1976 cohort used significantly more ambulatory care than the 1971 cohort over the nine years. There was a small increase in the frequency of referrals for consultations which was, as indicated earlier, low for the 1971 cohort relative to the non-elderly. The 1983/1971 cohort comparison showed a continuing trend towards increased usage. More disturbing, however, was the finding that a substantial portion of this increase, and particularly referrals for consultation, is directed at elderly persons in good health. (No data relating health use to health status were available for non-elderly persons although utilization has also increased among this segment of the population.)

Hospital Services

The vast majority of elderly (about 80%) were not admitted to hospital during the course of a year in the early 1970s. However, 5% of the elderly accounted for about 60% of the hospital days used by all the elderly in any given year, which suggests that these high users should be targeted for special attention.

Another study confirms that targeting these high users of hospital makes good sense. In any given year, 20% to 25% of high users will be repeat high users from the previous year. High users are also at high risk of death and nursing home admission. A stay of 37 or more days in hospital would identify the top 5% of hospital users in any one year.

In contrast to ambulatory physician visits, hospital use increases substantially with advancing age. Males were more likely to be hospitalized than age-matched females, but, when hospitalized, females had longer stays than males. Aside from sex, the characteristics of the elderly who had higher hospital usage than their peers were similar to those of the elderly who used more ambulatory care, i.e., residents in Elderly Persons Housing, persons in poorer health and those with more health problems. Retired elders did not use hospitals more than working elders of similar health status. Rural persons, however, used hospitals more than urban dwellers. This may reflect the greater availability of beds in rural areas owing to low occupancy rates and the greater geographic dispersion of the rural elderly.

The study comparing the 1976 and 1971 cohort examined the use of hospitals by the two groups over the 8.5 years following the date of interview. Despite a decrease in the supply of beds from 1976 through 1984, hospital admission rates of the cohorts differed little.

Hospitals in Manitoba, as in the U.S., play a substantial role in caring for the dying. Twenty percent of all the hospital days used in a year by all the elderly were used by those who died during the year. The chances of being hospitalized were five to seven times greater (depending on sex) for those who died than for those who survived; the dying were much more likely to stay 18 or more days in hospital, particularly if they were under age 75. Another study focusing on all high users of hospital care rather than specifically the dying, confirmed the hospitals' role in caring for the dying. Forty percent of the elderly high users during the course of one year died, most of them in the same year, the others within the next two years. Eighteen percent of the high users were admitted to a PCH that year or within the next two years.

Elderly who were high users of hospital care were more likely than their peers to have physicians who hospitalized their patients more often than other physicians with similar practices, and were more likely to be admitted to smaller hospitals with comparatively low bed occupancy rates.

Using an index of physicians' propensity to hospitalize, patients of physicians with markedly different practice styles

were found to be similar in age and health status. Only proximity to death had a greater impact on the likelihood of being hospitalized than the physician's propensity to hospitalize. Therefore, although a projected 10% increase in the number of very elderly might increase hospital day use by 16,000 days a 10% increase in the number of hospitalization-prone physicians would increase hospital day use by 45,000 days.

Montana and North Dakota have 10% more hospital admissions of the elderly than Manitoba, but our elderly stay twice as long in hospital. The U.S. spends 50% more per person on hospital services than Manitoba does. Since the case-mix in the States is similar to that in the Canadian provinces, the cost difference is probably the result of the higher cost of their inputs, such as paid staff and administrative costs (estimated to be 18% in the states versus 8% in Manitoba).

Two-thirds of Manitoba's elderly hospitalized as a result of an injury are admitted because of a fall, 10% because of another type of accident, and 11% because of the adverse effect of a medical treatment regimen. These three types of injuries account for just under 50,000 hospital days a year.

Advancing age and being female increase the risk of falling. Women aged 75 or more constitute one-quarter of the elderly population but accounted for just over half of the falls. Moreover, advancing age and being female increased the length of a hospital stay as a result of a fall. Elderly PCH

residents are significantly more likely to be hospitalized as a result of a fall than community residents. PCH residents are generally older and sicker than community dwellers, but they are also supposedly in a safer physical environment and in the care of paid staff.

Not all falls are preventable, but the study results highlight the need to implement preventive strategies which have been shown to be effective, particularly in PCHs, and to target efforts primarily at women aged 75 or more (when more is known about how to prevent osteoporosis and at what age prevention should start, the target group may be much younger women). Psychotropic drugs are known to be important contributors to falls among older elderly and MHSC has the capacity to monitor the types and dosages of psychotropic drugs prescribed by physicians for PCH residents and discourage their use where possible.

The fact that 10% of those hospitalized for an injury are in hospital because of the adverse effect of medical treatment regimens should be cause for concern about the prescription practices of some physicians or about the appropriate taking of medications by the patients. A well-designed study should be undertaken to determine whether it is possible to reduce hospital use due to the adverse effect of treatment regimes.

Personal Care Homes

From 1974 to 1981, the supply of PCH beds grew 11%, a rate similar to the percentage increase in the population aged

75 or more. As expected, the rate of admission to PCHs increased with advancing age from about 3 per 1000 persons aged 65 to 69 to 65 per 1000 persons aged 90 or more. Eighty percent of all new admissions were aged 75 or older. Although the bed supply grew, the rate of first admissions each year varied because, with high occupancy rates, the number of vacancies depends on the mortality rate, which fluctuates from year to year.

This period showed a steady trend towards fewer admissions of people requiring the two lighter levels of care (Levels I and II). The percentage of first admissions of people requiring Level I care decreased from 23% in 1974 to 14% in 1981. Similarly, the percentage admitted at Level II care fell from 55% to 48%. The proportion of heavy care admissions rose from 22% to 38% as the Continuing Care program, which started in 1974, began providing service to help maintain individuals at home. The increase in residents needing heavy care was one factor in the increased per-person cost of PCH services.

Although the health status of most PCH residents deteriorates over time, some survivors maintain their health status, and for a small minority, their health status improves. Of the survivors who required Level I care at admission, half still required this level of care eight years after admission. This illustrates the importance of avoiding or delaying the admission of persons requiring Level I care.

The significance of discouraging PCH admission of people who need light care is underlined by research showing that the average lengths of PCH stay range from two to seventeen years, depending on their characteristics at admission. Men and women under age 65 admitted at Level I could be expected to have the longest stays (an average of 15 years and 17 years respectively), but even men and women aged 85 or more admitted at Level I stay an average of 5 and 6 years respectively. As expected, the shortest stays were among people aged 85 or more who required heavy care at admission. It, therefore, appears sensible to make every effort to care for persons younger than 75 years requiring light or medium care in the community for as long as possible and to favour the admission of the older elderly who need heavy care. Such a policy does increase the cost of both home and PCH care, but these costs are substantially less than the cost of hospital care or building and operating more PCH beds.

In a comparison of the use of PCH beds by the 1971 and 1976 cohorts of elderly over a 6 1/2-year period (from mid-1973 to end of 1979 for the 1971 cohort and from mid-1978 to end of 1984 for the 1976 cohort), the ratio of PCH beds per population aged 75 or more was stable until 1981, then began to decline. This means that the 1976 cohort had less access to beds during the last 3 to 4 years of the study. Overall, the two cohorts did not differ in time to PCH admission but the average age at the time of admission increased, as did the proportion requiring a higher level of care at admission.

The characteristics of the elderly which predict PCH admission within 2 1/2 years are, in descending order of importance: age, having no spouse in the home, residency in Elderly Persons Housing, having been admitted to hospital within the past two years, having at least one problem with the basic activities of daily living and being cognitively impaired. These same characteristics, along with poor self-rated health and being female, also predict admission to a PCH within seven years. These findings were then used to estimate the likelihood of PCH admission for elderly persons with different combinations of these characteristics. The resulting risk profiles could permit hospitals and physicians to focus special attention on those at high risk and could enable government to estimate the size of the population at risk. No advantage has yet been taken of either of these opportunities in Manitoba.

Home Care

Since the home care program does not have a computerized information system, admission and discharge data had to be extracted manually and then merged with the data from the Aging in Manitoba Studies and from MHSC files. This permitted investigating the patterns of home care use, the factors which contribute to the use of home care, and the relationship between home care use and the use of hospitals or PCHs by the elderly. Unfortunately, however, the current manual information system cannot provide answers to other important

questions such as the relationship between type of need and intensity of service use which are critical for cost estimates and projections.

In 1976 (the first full year of the data system), about 5% of community residents aged 70 or more were admitted to the home care program; about 10% of these elderly received home care services at some time during the year. As expected, the use of home care increased with advancing age and females were more likely to receive service than males. Elderly persons aged 85 or more and females used home care services longer than younger elderly and males.

One-quarter of the new admissions were hospital discharges, three-quarters were admissions from the community. The older the person, the more likely he/she was to be admitted from the community. Nine percent of the newly admitted received services for three weeks or less, 30% were discharged within eight weeks, about half were discharged within six months, and two-thirds within a year; 23% still continued to receive help after two years.

Of the home care users who entered a PCH by September, 1978, 33% had been in the program 1 to 2 years, 10% 2 to 3 years and 6% over 3 years before their PCH admission, indicating that home care meets their needs for a relatively long time before placement is necessary. In fact, over 60% of these PCH admissions were aged 85 or more.

The overall mortality rate for home care users is higher than that of non-users, indicating that its users are sicker

than other elderly living in the community. The mortality rate among the elderly service users under age 85 was higher than that of their peers in the community, but this was not true for the users aged 85 or more. This suggests that the very elderly are in the program for reasons other than life-threatening illness and that, for them, home care is a substitute for PCH care, rather than for hospital care. (For confirmation of this, see the next sub-section.)

Examination of the rates of first admissions to the home care programs by the 1971 and 1976 cohorts over five years revealed that admissions fluctuate from year to year and that the later cohort had somewhat fewer admissions. However, as in the earlier study, admissions rose with age: more than one-third of community dwellers aged 85 or more received some home care services once over this five-year period.

A process similar to the one used to identify the risk characteristics for PCH admissions was used for admission to home care. Some of these factors are the same although the importance of their contribution may differ. The two chief differences are that the third highest predictor of admission is an inability to meet day-to-day needs (e.g., cooking, housekeeping), and that cognitive impairment, though more prevalent among home care users than nonusers, is not a predictor of admission, probably because remaining safely at home requires reasonable judgement and because caregiving by families becomes too onerous. This study also suggests the

use of risk profiles for government planning and for identifying those who might benefit from special attention.

Substitution of One Service for Another

Doubling the number of geriatric assessment and rehabilitation beds increases admissions but does not decrease the time that hospital patients who are awaiting transfer to such beds must wait. This may largely be because access to each unit is determined by the individual unit rather than by a system which categorizes the urgency of the need for admission and favours admission on the basis of urgency.

PCH residency significantly reduces the likelihood of hospital admission. PCH residents are also less likely to undergo surgery and to die in hospital than are elderly community dwellers. However, PCH residency does not reduce the length of hospital stay for those with a stay of 18 days or more. This may be because PCH residents are generally sicker than nonresidents and therefore require longer stays before discharge for serious illnesses. Nevertheless, they are usually returning to facilities with 24-hour-a-day staff coverage whereas community elders return to their homes. It would be useful to find out why the length of hospital stay is not affected by PCH residency.

Home care appears to substitute for PCH admission. The results of a study in which the 1976 cohort of elderly was followed for five years show that the years in which PCH admissions are lower due to fewer vacancies, home care

admissions are higher; when the PCH vacancy rate is higher, home care admissions are reduced.

Impending Death and Use of Service

Elderly people who rate their health as poor die sooner than those who think their health is good, even though their objective health status is similar. This suggests that persons who rate their health as poor should be regarded as being at high risk regardless of their objective health status.

As expected, dying persons use more health care services than survivors, but most studies focus on the use of one health care sector, most often hospitals. One Manitoba study, however, compared the use and associated cost of three different sectors (medical, hospital and PCH) among persons aged 45 or more for four years prior to their death with the use of age-matched persons in the general population, including both those who died and those who survived, and age-matched persons who survived the full four years.

Although hospital use generally increases with advancing age, the most dramatic increase in the hospital use by the dying of all ages occurs in the last year of life. Hospital-day use more than tripled for all groups in the last year of life. However, among persons aged 75 or more, impending death increased hospital use over a much shorter period.

PCH use also generally increases rapidly with age but instead of a dramatic increase in hospital use in the last

year of life, there were large, regular increases in the length of nursing home stay in each of the four years before death. This suggests that persons are entering a PCH not because they are dying but because they are old and dependent.

In contrast to the use of institutional services, the elderly made fewer visits to the doctor in the years before death than younger people.

A rough estimate of the per-diem combined cost of all medical, hospital and PCH services shows that people who die at age 75 or later have more, rather than less, expensive deaths than persons aged 45-74 because a higher percentage of the older elderly, and particularly those age 85 or more, are using both hospitals and PCHs. While the estimated cost of care for the four years before death increases from an average of $21,000 for people aged 45-64 to $28,600 for those aged 85 or more, the cost of PCH care increases from an average of $1100 to $20,500. However, the cost estimates are crude because they capture only the average cost of a hospital day regardless of the hospital involved or the treatment provided. Therefore, the age differences may accurately reflect higher hospital use but not necessarily higher cost.

However, despite the expectation from age-sex projections that hospital use would increase 8.3% between 1970 and 1981 as a result of an increase in the number of elderly, the number of hospital days used per thousand population by elderly Manitobans actually declined 6.3%. Just as the decrease in hospital use reflects a government policy decision

to reduce the number of acute beds/1000 population, a more recent decision to reduce the number of PCH beds/1000 persons aged 75 or more will likely reduce PCH use. This study did not, however, estimate the effect of both reductions on home care costs.

It is also important to note that over a third (35.8%) of persons who died spent two weeks or less in any institution in the four years before their death. This low-use group also spent an average of less than one day in a nursing home and only 3 1/2 days in hospital in the year of their death. Thirty percent of very old males and 19% of very old females were in this group. It would be useful to determine whether low users of hospital and PCH care are receiving home care. More generally, ways to reduce the high costs associated with death need to be explored.

Predictors of Successful Aging

The keys to long-term survival and long-term independence were explored by identifying who, among the elderly interviewed in 1971, were still alive and still functionally independent in 1983. In all, 44.6% of the elderly were still alive, but about half of them were functionally dependent to some extent.

The significant predictors of "successful aging" are being younger to start with, being in better physical and mental health 12 years earlier and not losing a spouse through death or PCH admission during the intervening years. (Note

the inverse relationship of these predictors to the predictors of PCH admission). Regular contact with physicians is not related to successful aging. Individuals who survived and remained independent used remarkedly few health care services (including ambulatory, hospital, PCH and home care). Use was higher among dependent survivors but was still less than for those who died between 1971 and 1983.

Are the Elderly Staying Healthy Longer?

A comparison of the health status of the 1971 and 1983 cohorts of elderly Manitobans shows that, while the 1983 cohort was living to be older, their physical and mental functioning status was poorer, they had more health problems and a higher rate of hospitalization for serious, comorbid disease than the 1971 cohort. Over the 12-year period, Manitoba had an increase of about 31% in number of elderly, but an increase of 77% in the number of elderly in poor health. This suggests that elderly people are living longer but at the expense of having to manage with serious health limitations. With the decrease in PCH beds per elderly population, this change may have a significant effect on the need for home care and its costs.

Summary and Recommendations

III.1.1 A health care "crisis" as a result of the aging of the population is not inevitable if changes in health care policies and practices are made in line with

demographic trends. Research results indicate where attention must be focused to control costs.

III.2.1 The studies on physician visits demonstrate a disturbing trend. Not only has the number of visits per elderly person increased, but a major proportion of this increase in ambulatory medical services have gone to elderly persons in good health. Given physicians' ability to generate demand for a substantial portion of their services, an increasing physician supply and the fee-for-service method of payment, controlling medical service costs is difficult unless total payments are linked to the total volume of service.

III.2.2 Since the growth in physician supply also increases the pressure on hospital beds and on the acquisition of new equipment, limiting this growth could reduce these problems. The number of new undergraduate medical students has recently been reduced, but little has been done to reduce residency training programs or to alter the mix of specialists produced.

III.2.3 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- MAKE PROJECTIONS OF THE IMPACT OF CURRENT UNDERGRADUATE CLASS SIZE AND CURRENT RESIDENCY TRAINING PROGRAMS ON MANITOBA PHYSICIAN-POPULATION RATIOS.
- ADOPT POLICIES TO CONTROL THE INCREASE IN MEDICAL SERVICE COSTS. LINKING TOTAL PAYMENTS TO THE VOLUME OF SERVICES AND CHANGING BOTH THE NUMBERS OF UNDERGRADUATE MEDICAL STUDENTS AND THE NUMBERS AND MIX OF RESIDENCY

TRAINING POSITIONS ARE POSSIBLE WAYS TO ACHIEVE THIS GOAL.

III.3.1 In view of the consequences for future hospital and PCH use as well as health risks, elderly persons who spend more than 37 days in hospital in any one year should be targeted for special attention.

III.3.2 SINCE MANITOBA HAS GERIATRICIANS IN MOST OF ITS REGIONS (IN CONTRAST TO THE REST OF CANADA), IT IS RECOMMENDED THAT MANITOBA HEALTH:

- IN CONJUNCTION WITH THE CENTRE FOR HEALTH POLICY AND EVALUATION AND ONE OR TWO HOSPITALS WHICH HAVE GERIATRICIANS ON STAFF, LAUNCH A STUDY TO EVALUATE WHETHER GERIATRIC ASSESSMENT AND TREATMENT OF SUCH PERSONS CAN REDUCE FUTURE HOSPITAL OR PCH USE.
- IF WARRANTED BY THE RESULTS OF SUCH A STUDY, THE CPSM SHOULD ENCOURAGE A REFERRAL OF ALL ELDERS WHO USE 37 OR MORE HOSPITAL DAYS TO A GERIATRICIAN.

III.4.1 There are several lines of evidence, including our work on physician practice style, suggesting that there is a considerable amount of physician discretion in admitting patients to hospitals, that the cost is high, and that old age increases the risk associated with high risk procedures and long hospital stays. It is difficult to use administrative data to identify which admissions should not have been made or which physicians admit too

many elderly patients to hospital. Administrative data, however, can be used to identify regions or hospital service areas which have unusually high rates of elderly admissions for certain procedures or specific diagnoses, or which have much higher than expected overall levels of elderly hospital admissions given the patient population served.

III.4.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- ADOPT THE SAME STRATEGIES AS OUTLINED IN RECOMMENDATIONS II.1.4 AND II.2.3 BUT TARGETED SPECIFICALLY AT REGIONS OR SERVICE AREAS WITH UNUSUALLY HIGH ELDERLY ADMISSION RATES IN GENERAL OR FOR SPECIFIC MEDICAL OR SURGICAL TREATMENT.

III.5.1 Expanding resources for screening or outreach programs targeted at the elderly appears unwarranted, but disease prevention and health promotion efforts directed toward the elderly should be expanded, as recommended recently by the U.S. Institute of Medicine. Preventive efforts to reduce falls among women aged 75 or more living in the community and especially those living in PCHs have been shown to yield positive results elsewhere.

III.5.2 IT IS, THEREFORE, RECOMMENDED THAT:

- THE HEALTH PROMOTION DIRECTORATE, WHOSE PROGRAMS CURRENTLY ARE LARGELY TARGETED AT YOUNGER PEOPLE, BE DIRECTED TO FOCUS SOME ATTENTION ON SPECIAL GROUPS OF ELDERLY.

- THE LONG-TERM CARE DIVISION OF MHSC BE DIRECTED TO WORK WITH THE PCHS TO DEVISE WAYS TO REDUCE FALLS IN THESE FACILITIES.

III.6.1 PCHs are admitting an increasingly greater proportion of elderly who are older and require heavy care or constant supervision. Efforts should be directed to ensuring that this trend continues as the ratio of PCH beds to persons aged 75 or older declines, because age and level of care on admission affect length of PCH stay, by making it possible for Continuing Care to keep more younger and less dependent people at home. While this would increase both PCH and home care costs, they would also reduce the cost of building and operating more PCH beds as the population aged 75 or more increases. Such an approach would also reduce future problems of an oversupply of beds when the size of the elderly population plateaus and then declines.

III.6.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- CONTINUE TO FURTHER REDUCE PCH ADMISSIONS OF PERSONS REQUIRING LIGHTER LEVELS OF CARE;
- APPROPRIATE ADJUSTMENTS BE MADE IN PCH AND CONTINUING CARE FUNDING TO REINFORCE THIS TREND.

III.7.1 To ensure that hospitals and physicians make every effort to reduce or delay PCH admissions, Manitoba Health could assume responsibility for circulating the profiles

of the elderly whose combination of characteristics place them at high risk of PCH admission to each hospital and request that ambulatory and hospital patients with these profiles are given special attention. Manitoba Health could also request that the CPSM circulate this information to physicians to use in their ambulatory care practices.

III.7.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- INSTRUCT MHSC TO USE ONE OF ITS REGULAR MEETINGS WITH HOSPITAL ADMINISTRATORS TO ENCOURAGE THE USE OF THE RISK PROFILES BY THEIR ADMITTING PHYSICIANS.
- ASK CPSM TO ENCOURAGE PRIMARY CARE PHYSICIANS TO FOCUS SPECIAL ATTENTION ON ELDERLY PERSONS WITH HIGH RISK PROFILES.
- INSTRUCT THE OFFICE OF CONTINUING CARE TO ENCOURAGE STAFF TO USE THESE RISK PROFILES IN ASSESSING PERSONS REFERRED TO THE PROGRAMS FROM HOSPITAL AND FROM THE COMMUNITY.

III.8.1 Adding geriatric assessment and rehabilitation beds does not necessarily speed up access to these units by patients awaiting transfer to them from acute hospital. Winnipeg has as many or more such beds per elderly person than most other Canadian cities. In view of the cost of geriatric units, their location in selected hospitals and the pressure on hospital beds, access to geriatric units should be based on a system like the one used by

Continuing Care for access to PCHs. Such a system should be used to assess the urgency of transfer from hospital or from the community to ensure that rehabilitation starts as soon as possible. This recommendation was recently made by the Task Force on Extended Beds; the Task Force also noted that Winnipeg has an adequate supply of geriatric assessment and rehabilitation beds.

III.8.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- ADOPT THE RECOMMENDATION MADE BY THE TASK FORCE ON EXTENDED BEDS WITH REGARD TO ESTABLISHING AN ADMISSION SYSTEM FOR GERIATRIC UNIT BEDS.

III.9.1 PCH residency reduces hospital admission, but not lengths of hospital stay for PCH residents.

III.9.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- EXAMINE WHY HOSPITALS DO NOT DISCHARGE PCH RESIDENTS ANY SOONER THAN NON-RESIDENTS.

III.10.1 The small minority of elderly who use home care are sicker and more dependent than non-users, but advancing age changes the reasons for their admission to the program from post-hospital recovery to a PCH bed substitute.

III.10.2 For the older age groups, social services are key services. Inability to carry on day-to-day chores such as housekeeping and meal preparation is,

after age, the most significant predictor of need for home care; these older elderly are those most at risk of requiring PCH admission. Since home care substitutes for PCH admission, social supports should be treated as being as important as medical services.

III.10.3 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- RECOGNIZE THE IMPORTANCE OF CONTINUING CARE SERVICES AS A SUBSTITUTE FOR PCH ADMISSION AND ADJUST ITS BUDGET IN LINE WITH THE DECREASE IN THE RATIO OF PCH BEDS TO THE NUMBER OF OLDER ELDERLY.
- RECOGNIZE THE IMPORTANCE OF THE SOCIAL SUPPORT SERVICES PROVIDED BY CONTINUING CARE, ESPECIALLY AMONG THE ELDERLY AGED 75 OR MORE.

III.11.1 As expected, closeness to death is a major factor in explaining the high health care costs for some individuals. For the elderly, especially those aged 75 or more, the high cost does not appear to be simply the result of high use of hospital or physician services; the cost of their PCH residency is a major contributor. However, one-third of the dying elderly use very few health services and research to find out the reasons might prove useful in reducing costs.

III.12.1 The work on the predictors of PCH and home care use is a potentially useful departmental planning and monitoring tool. This research is currently being

exploited for planning purposes (e.g., estimating the size of the target population) by other Canadian and U.S. jurisdictions but not by Manitoba. However, the lack of information on the relationship of individuals' characteristics to the intensity of service use, owing to the current manual information system does not permit adequate cost projections.

III.12.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- CONSIDER ADOPTING THE USE OF THOSE RISK PROFILES TO ESTIMATE THE NUMBER OF FUTURE HOME CARE USERS.
- IMPLEMENT A COMPUTERIZED DATA SYSTEM WHICH WOULD PERMIT REALISTIC ESTIMATES OF FUTURE HOME CARE COSTS AND BETTER MONITORING OF THE CURRENT PROGRAM.

III.13.1 The finding that the increase in longevity is accompanied by increased dependency suggests that only an improvement in their physical and mental status may help increase the number of elderly who age "successfully", thus reducing health care use. Changing our research funding priorities to search for ways to eliminate, delay or better manage chronic, disabling diseases and to focus on the determinants of health may prove more successful in containing costs while improving the health status of the elderly than simply providing more health care services.

III.13.2 IT IS, THEREFORE, RECOMMENDED THAT MANITOBA HEALTH:

- MAKE SUCH RESEARCH A PRIORITY FOR THE MANITOBA HEALTH RESEARCH COUNCIL AND ENCOURAGE THE FEDERAL MEDICAL RESEARCH COUNCIL TO DO THE SAME.

SECTION IV: THE INCIDENCE AND PREVALENCE OF SPECIFIC DISEASES

The prevalence of a specific disease is the rate at which the disease is present in the population during the year. The incidence of a specific disease is the annual rate at which new cases of the disease are identified. Both measurements are important because they permit us to compare the province with other jurisdictions and to estimate both the economic and human costs associated with the disease now and in the future. In addition, the incidence rate in combination with the prevalence rate and calculated at two points in time, permits us to discover whether the disease is increasing, decreasing or remaining about the same in the population.

Two recent studies have used the MHSC data to estimate the incidence and prevalence of a specific disease. The study on diabetes was designed to assess the usefulness of the Manitoba MHSC data to provide these estimates. These data were carefully validated by comparisons with information from other data sources. The study reported that the annual incidence rate was 7.8 cases per 1000 persons aged 25 or more and that the annual prevalence rate rose from 0.8% among people aged 25 to 44 to 7.6% among the elderly. 1.9% of pregnancies were found to be associated with diabetes. The estimated prevalence of diabetes in Manitoba for 1983 is comparable to that derived from surveys done in Canada and the U.S. The incidence rate in Manitoba was higher than that reported from one study of the U.S. population, but this

difference may be an artifact of the method used in the U.S. study to estimate incidence.

The second study focussed on the incidence and prevalence of Alzheimer's and other dementias and found an incidence of 1/100 elderly. However, the prevalence of moderate to severe mental impairment rose steadily with advancing age, from 4.8% for males and 2.9% for females aged 65 to 74 to 18.1% for males and 33% of females aged 85 or more. This compares with rates of 3.9% for people aged 65 to 74 and 47.6% for persons aged 85 or more in the most recent U.S. study, in which each person suspected of having the disease when surveyed was followed up with a full clinical work-up.

The Manitoba study also found that a dementia diagnosis had a major impact on mortality and PCH admission. In fact, such a diagnosis contributed more to PCH use than age and sex combined.

Since Alzheimer's and other dementias have such a major effect on both health status and PCH use as well as on formal home care services and family caregivers, investigations such as the projected Canada-wide study, which will seek to identify risk factors, are a welcome first step in developing preventive and improved management measures.

Summary

IV.1 Two recent studies are the first to use the Manitoba data to estimate the incidence (the annual rate at which new cases of a disease are identified) and prevalence (the rate at which a disease is present in the population during the year) of a specific disease. The two diseases investigated were diabetes and dementia. The study on dementia also assessed the effect of a dementia diagnosis on PCH admission and death.

IV.2 The studies suggest that the Manitoba data can be used to advantage to estimate the incidence and prevalence of certain diseases in Manitoba.

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